Rubella

(Also known as German Measles)

Report Immediately

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1) THE DISEASE AND ITS EPIDEMIOLOGY

A. Etiologic Agent

Rubella is caused by rubella virus (genus *Rubivirus*, family *Togaviridae*).

B. Clinical Description

When contracted after birth, rubella is usually a mild disease characterized by a generalized maculopapular rash, swollen lymph nodes, and slight fever. Transient inflammation of the joints rarely occurs in children, but is common in adolescents and adults, especially women. Encephalitis (1 per 6,000 cases) and thrombocytopenia (1 per 3,000 cases) are rare complications. *Up to 50% of infections occur without recognized rash.*

Rubella is of greatest danger to the unborn fetus. Up to 90% of infants born to mothers infected in the first trimester will develop the physical anomalies referred to as congenital rubella syndrome (CRS). CRS is characterized by any of a number of complications and findings, including blindness, heart defects, deafness, behavioral disorders, mental retardation, growth retardation, bone disease, enlarged liver and spleen, thrombocytopenia, and purple skin lesions. Some effects may not be apparent at birth.

Reinfection has been demonstrated on rare occasions, but only very rarely has resulted in CRS.

C. Reservoirs

Humans are the only host.

D. Modes of Transmission

Rubella is transmitted person-to-person by droplet or direct contact with the nasopharyngeal secretions of an infected person or with the nasopharyngeal secretions or urine of an infant with CRS.

E. Incubation Period

The incubation period is usually 16–18 days, with a range of 14–23 days.

F. Period of Communicability or Infectious Period

The infectious period is usually from 7 days before to 7 days after rash onset, although volunteer studies have shown presence of rubella virus in nasopharyngeal secretions for up to 14 days after rash onset. Rubella is similar to influenza and mumps in infectiousness and not as contagious as measles or chickenpox.

A person who is asymptomatic, but laboratory-confirmed and epidemiologically linked to a laboratory-confirmed case that is clinically consistent with rubella, should be considered infectious for 5 to 30 days after exposure.

Infants with CRS shed virus in nasopharyngeal secretions and urine for a longer period; a small proportion of them continue to be infectious for 1 year or more.

G. Epidemiology

Rubella occurs worldwide. In the temperate zones, peak incidence is in late winter and early spring. Before the widespread use of rubella vaccine, which was licensed in 1969, peaks of rubella incidence occurred in the United States every 6–9 years, and most cases occurred in children. Now that children are well immunized, most cases have occurred in young, unvaccinated adults in college and occupational settings. Recent serologic surveys indicate that about 10% of young adults are susceptible to rubella.

In recent years in the US and Massachusetts, outbreaks have occurred among immigrant populations due to lack of rubella vaccination programs in their countries of origin. Outbreaks now occur predominantly in workplaces and communities at large. CRS now disproportionately affects infants born to foreign-born women. Identifying and managing susceptible pregnant women who may have been exposed to rubella is particularly challenging, especially in community-wide outbreaks.

2) REPORTING CRITERIA AND LABORATORY TESTING SERVICES

A. What to Report to the Massachusetts Department of Public Health

- A case of rash illness accompanied by fever, or
- A suspect case of **rubella** (with or without fever), as diagnosed by a healthcare provider; *or*
- Positive serologic test for rubella IgM; or
- Significant rise between acute- and convalescent-phase titers in serum rubella IgG *or* total antibody level by any standard serologic assay; or
- Isolation of rubella virus from a clinical specimen.

- A suspect or confirmed case of **congenital rubella syndrome (CRS)** in a child (usually a baby), as diagnosed by a healthcare provider (the CRS case definition appears under "Additional Information" at the end of this chapter).

Note: See Section 3) C below for information on how to report a case.

B. Laboratory Testing Services Available

Note: Please refer to Attachment A (at the end of this chapter) for details about diagnostic testing for CRS.

1. Serologic Testing for Non-Congenital Rubella
   - **Rubella IgM test:** False positive rubella IgM results can occur; for example, in persons with parvovirus infection, infectious mononucleosis, or rheumatologic disease. MDPH strongly recommends submission of specimens to the Massachusetts State Laboratory Institute (SLI), where they will be tested by a 2-day test. The specimen should be drawn at least 3 days after onset of rash (to minimize the possibility of false negative results) and within 6 weeks of rash onset. (If serum is collected prior to the third day, a follow-up specimen may be requested.).
   - **Rubella total antibody paired-titer test:** Testing for rubella IgM is greatly preferred because it provides an earlier result. However, the SLI also performs a paired titer test. Acute serum should be collected as soon as possible after onset of rash; convalescent serum should be collected about 14 days later.
   - **Shipment of sera:** Please refer to Attachment B (at the end of this chapter) for instructions on collecting and submitting specimens to the SLI. At least 2 ml of serum should be sent on a cold pack, with a completed virus serology requisition form (in Attachment B), to: Virus Serology Laboratory, State Laboratory Institute, 305 South Street, Jamaica Plain, MA 02130. Before sending, please call an immunization epidemiologist at (617) 983-6800.

2. Virus Isolation/Molecular Characterization of Rubella: Virus isolation is much less useful for disease control purposes than serologic testing because results are not available for several weeks. However, molecular

characterization of isolated rubella virus is an extremely important tool in epidemiologic research, for example, to determine source of the infection and which cases and outbreaks are linked to each other. Also, in cases where serology is not useful or possible (for example, when a suspect case has been recently vaccinated with MMR), virus isolation can be used for confirmation, and molecular characterization can distinguish wild-type virus from vaccine virus. Specimens for rubella virus isolation should be submitted to the SLI, which will forward them to Georgia State University. Please contact an immunization epidemiologist at (617) 983-6800 about submitting specimens for virus isolation, and consult Attachment C (at the end of this chapter).

3) DISEASE REPORTING AND CASE INVESTIGATION

A. Purpose of Surveillance and Reporting

- To identify all cases and susceptible exposed people, and to prevent further spread of infection, especially to pregnant women.
- To ensure appropriate management of exposed pregnant women and their babies.
- To monitor the effectiveness of outbreak control strategies.
- To identify cases of congenital rubella infection/syndrome that may occur after a cluster or outbreak of rubella.
- To identify the source of infection by virus isolation and molecular characterization so as to better understand how and why the case(s) occurred.

B. Laboratory and Healthcare Provider Reporting Requirements

Refer to the list of reportable diseases (at the end of this manual's introductory section) for information.

Note: Due to the public health implications of rubella, the Massachusetts Department of Public Health (MDPH) requests that information about any case be **immediately reported** to the local board of health where diagnosed. If this is not possible, call the MDPH Division of Epidemiology and Immunization at (617) 983-6800 (weekdays) or (617) 983-6200 (nights/weekends).

C. Local Board of Health Reporting and Follow-Up Responsibilities

MDPH regulations (*105 CMR 300*) stipulate that each local board of health (LBOH) must report the occurrence of any case of rubella. Refer to the *Local Board of Health Reporting Timeline* (at the end of this manual's introductory section) for information on prioritization and timeliness requirements of reporting and case investigation.

Note: MDPH requests that information about any suspect or known case of rubella, as defined by the criteria in Section 2) A above, be **immediately reported** to the MDPH Division of Epidemiology and Immunization by calling (617) 983-6800 (weekdays) or (617) 983-6200 (nights/weekends).

Note: Due to national surveillance and reporting requirements, the Massachusetts Immunization Program (MIP) takes the lead on rubella and CRS case investigation (including filling out the case report form) and disease control recommendations, in collaboration with the local board of health. MIP will keep the local board of health informed of all significant developments and will request the assistance of the board of health as needed.

D. Initial Questions to Ask Healthcare Provider and Patient

In order to assess the likelihood that a suspect case is a true case prior to laboratory testing, MIP and/or other public health staff helping in the investigation should ask about: 1) symptoms, 2) rubella immunization history, 3) country of origin and length of residence in US, 4) recent history of travel (to where and dates), 5) whether there were any recent out-of-town visitors (from where and dates), and 6) whether there was any recent contact with anyone with similar symptoms.

4) CONTROLLING FURTHER SPREAD

Note: This section provides detailed control guidelines that are an integral part of case investigation. LBOHs should familiarize themselves with the information. However, the Massachusetts Immunization Program will take the lead on implementing control measures, in collaboration with the board of health.

A. Isolation and Quarantine Requirements (*105 CMR 300.200*)

The Isolation and Quarantine Requirements (promulgated November 1998, printed July 1999) are out of date with respect to rubella and CRS. Current recommendations of CDC and MDPH (as of 2000) are as follows:

Non-congenital rubella:

Minimum Period of Isolation of Patient
Until 7 days after onset of rash.

Minimum Period of Quarantine of Contact
Healthcare workers and students who are not appropriately immunized or do not have serologic evidence of immunity will be excluded from work or classes from the 7th through the 23rd day after their last exposure. When multiple cases occur, susceptibles need to be excluded until 23 days after the onset of the last case at the school or workplace.

Congenital rubella:

Minimum Period of Isolation of Patient
Isolation from susceptible persons for the first year of life or until two cultures of clinical specimens (nasopharyngeal secretions or urine) obtained 1 month apart after age 3 months are negative for rubella virus.

Minimum Period of Quarantine of Contacts
No restrictions except for susceptibles. Same as for non-congenital rubella, above.

B. Protection of Contacts of a Case (Immunization, Prophylaxis or Other Measures)

1. Implement control measures *before* serologic confirmation. Ask the questions listed in Section 3) D above. Note that the relevant exposure period for rubella is 14–23 days prior to rash onset.
2. Isolate the case during his/her infectious period, as defined in Section 1) F above.
3. Identify all those exposed. Think in terms of the "zones of exposure" and consider members of the following groups, if they were in contact with the case during his/her infectious period.
   - household members
   - school/daycare contacts (students and staff)
   - staff and patients at medical facility where patient was seen
   - individuals at workplace of case (especially daycare centers, schools, and medical settings)
   - members of same religious/social groups
   - members of sports teams, other extracurricular groups
   - bus or carpool mates
   - close friends
   - persons potentially exposed at social events, travel sites, etc.
4. Identify high-risk susceptibles with whom the case had contact during his/her infectious period. Pregnant women are particularly important to identify because of the risk of CRS. Pregnant women, infants < 12 months of age, and immunocompromised individuals should be referred to their obstetrician/healthcare provider.
5. Identify all other susceptibles, that is, individuals *without* proof of immunity as defined below:

PROOF OF IMMUNITY TO RUBELLA[1]
• Birth in the US before 1957, **unless** a woman of child-bearing age who is pregnant or could become pregnant, a healthcare worker, or a college student; or • Documentation of rubella vaccination on or after the first birthday, **unless** a pregnant woman; or • Serologic proof of immunity.[2]
[1] Remember, persons born outside the US (without written proof of immunity) are more likely to be susceptible, especially if they have been in the US for only a short time. [2] Serologic evidence of immunity is the only acceptable proof of immunity for pregnant women.

6. Immunize all susceptibles. Live-virus rubella vaccine given after exposure has not been demonstrated to prevent illness, but theoretically could prevent illness if administered within 3 days of exposure. All susceptibles who are ≥ 12 months of age (and for whom it is not contraindicated) should receive rubella vaccine given as the combined formulation of measles, mumps, and rubella (MMR) vaccine. (Please review Attachment D [at the end of this chapter] on "MMR Vaccine Concerns.")
7. Exclude exposed susceptible individuals as follows:
   - **If there was a discrete (one-time) exposure**, exclude from day 7 through 23 from that exposure.
   - **If there was continuous exposure**, exclude from day 7 through 23 from the day of rash onset in the case.
   - **If there is more than one case of rubella**, exclude until 23 days after the onset of rash in the last reported case in the outbreak setting.
8. Conduct surveillance for two incubation periods (46 days) after rash onset in the last case or the last exposure in the setting, whichever is later.

C. Managing Special Situations

Control guidelines for three situations—1) rubella in healthcare facilities, 2) when a pregnant woman has been exposed, and 3) infants with CRS—are presented below. Note that these situations are not mutually exclusive.

Situation 1: Rubella in healthcare facilities

If a confirmed or suspect case of rubella has visited a healthcare facility during his/her infectious period, contact the infection control staff and go over the following recommendations with them:

1. **Identify all high-risk patients and staff exposed to the rubella case.** Pregnant women and immunosuppressed individuals should be referred to their healthcare providers to determine if they are immune.

   Pregnancy and Immune Globulin. Routine use of IG for postexposure prophylaxis is not recommended, even for susceptible pregnant women, because IG does not guarantee prevention of fetal infection. The only time IG may be considered is when infection occurs early in pregnancy and termination is not an option.

2. **Identify all other susceptible exposed patients and staff at the facility.** Pediatricians of exposed infants should be notified. Proof of immunity is defined as:

PROOF OF IMMUNITY TO RUBELLA[1]
• Birth in the US before 1957, **unless** a woman of child-bearing age who is pregnant or could become pregnant, a health-care worker, or a college student; or • Documentation of rubella vaccination on or after the first birthday, **unless** a pregnant woman; or • Serologic proof of immunity.[2]
[1] Remember, persons born outside the US (without written proof of immunity) are more likely to be susceptible, especially if they have been in the US for only a short time. [2] Serologic evidence of immunity is the only acceptable proof of immunity for pregnant women.

3. **Notify healthcare providers of all exposed patients.**

4. **Immunize all susceptible patients and staff.** Live-virus rubella vaccine given after exposure has not been demonstrated to prevent illness, but theoretically could prevent illness if administered within 3 days of exposure. All susceptibles who are ≥12 months of age (and for whom it is not contraindicated) should receive rubella vaccine given as the combined formulation of measles, mumps, rubella (MMR) vaccine. (Please review Attachment D [at the end of this chapter] on "MMR Vaccine Concerns.")

   Previous administration of human anti-Rho(D) immune globulin (RhoGam) does not generally interfere with an immune response to rubella vaccine. However, women who have received anti-Rho immune globulin should be serologically tested 6–8 weeks after vaccination to assure that seroconversion occurred. If other antibody-containing blood products are needed for other reasons, they should be administered at least 2 weeks before and deferred for up to 11 months after administration of MMR vaccine.

5. **Exclude susceptible staff.** Unlike measles, vaccinating immediately postexposure does not prevent an individual from acquiring rubella. Therefore, all susceptible individuals without proof of immunity, including those just vaccinated, can become infectious and must be excluded on days 7 through 23 postexposure. They may return on the 24th day. If additional cases occur, the exclusion period may need to be extended.

6. **Isolate susceptible patients and suspect/confirmed cases**. Susceptible patients ≥12 months of age should be vaccinated and placed on droplet precautions for days 7–23 after exposure. They may be taken off precautions on the 24th day. All suspect and confirmed cases should be placed on droplet precautions during their infectious period. The infectious period for rubella is 7 days before through 7 days after rash onset. They may be taken off precautions on the 8th day.

7. **Conduct surveillance** for two incubation periods (46 days) after the last exposure in the facility, and **report all suspect cases of rubella to the Massachusetts Immunization Program at (617) 983-6800.**

8. **Place any new cases of rash illness on droplet precautions or exclude for 7 days after rash onset.** A blood specimen should be obtained 3 days after rash onset and sent to the SLI. New cases should be **REPORTED** to the Massachusetts Immunization Program immediately.

Situation 2: When a pregnant woman has been exposed

1. **Contact the prenatal care provider and determine the exposed pregnant woman's immune status.** Send the provider the memo on "Diagnosis of Rubella Infection in Pregnant Women Exposed to Rubella and in their Babies" (Attachment A at the end of this chapter). Immunity must be documented by a verified, dated record of a positive serology test; documentation of having received rubella-containing vaccine does **not** constitute proof of immunity for exposed pregnant women. Nevertheless, it is important to collect such documentation of prior rubella vaccination, because it serves to reduce the level of suspicion (and anxiety) that rubella infection occurred, it aids in the interpretation of the lab results, and it allows us to identify occurrences of reinfection.
2. **If susceptible, arrange for diagnostic testing.** Serial serologic testing for rubella in the susceptible pregnant woman (*i.e.,* one without a pre-existing positive serology test) is described in Attachment A. To determine whether or not infection occurred may require as many as three blood specimens to be collected within a 6-week period. If the outbreak (and potential for exposure) continues beyond this initial 6-week testing period, specimens should be collected from susceptible exposed pregnant women every 10–14 days if exposure continues, or every 3–4 weeks in cases of no known exposure, and tested together with the first specimen. Diagnostic testing of susceptible pregnant women will be necessary in **all cases** of presumed or possible exposure
   - *regardless* of the point in pregnancy in which the exposure occurred (because of the possibility of late effects), and
   - *regardless* of whether the woman had symptoms of rubella (because of the high proportion of asymptomatic infections).

   Diagnostic testing of the baby, also described in Attachment A, will be necessary if rubella infection in the mother was not reliably ruled out, as reflected below:

	Pregnant woman's lab results		
Possible conclusions	Rubella IgM-neg. and no rise in IgG	Rubella IgM-pos. or significant rise in IgG	Maternal infection neither confirmed nor ruled out prior to delivery
Woman infected?	No	Yes	Unknown
Need to follow baby?	No	Yes—see Attachment A	Yes—see Attachment A

Situation 3: Infants with CRS

In cases of suspect or confirmed CRS in an infant, contact the infection control staff in any facility in which the infant was seen, obstetrician, and pediatrician (if any); fax them the memorandum on "Diagnosis of Rubella Infection in Pregnant Women Exposed to Rubella and in their Babies" (Attachment A at the end of this chapter); and review the recommendations with them:

1. **Immediately place all suspect cases of CRS on contact precautions.** Infants with CRS shed virus in their urine and nasopharyngeal secretions and can remain infectious for 1 year or more after birth. Both the American Academy of Pediatrics in the *Red Book* and the Centers for Disease Control and Prevention (CDC) in the *CDC Guidelines for Isolation and Precautions in Hospitals* recommend contact precautions.

2. **Place all suspect cases of rubella on droplet precautions during their infectious period.** The infectious period for rubella is from 7 days before until 7 days after rash onset.

3. **Identify all high-risk patients and staff exposed to the CRS and/or rubella case(s).** Pregnant women and immunosuppressed individuals should be referred to their healthcare providers to determine if they are immune.

Pregnancy and Immune Globulin. Routine use of IG for postexposure prophylaxis is not recommended, even for susceptible pregnant women, because IG does not guarantee prevention of fetal infection. The only time IG may be considered is when infection occurs early in pregnancy and termination is not an option.

4. **Identify all other susceptible exposed patients and staff at the facility.** Pediatricians of exposed infants should be notified. If a baby with CRS has been in a nursery where visitors and other family members have spent significant amounts of time, the immunity of those exposed to the baby should be evaluated. Proof of immunity is defined below:

PROOF OF IMMUNITY TO RUBELLA[1]
• Birth in the US before 1957, **unless** a woman of child-bearing age who is pregnant or could become pregnant, a health-care worker, or a college student; or • Documentation of rubella vaccination on or after the first birthday, **unless** a pregnant woman; or • Serologic proof of immunity.[2]
[1] Remember, persons born outside the US (without written proof of immunity) are more likely to be susceptible, especially if they have been in the US for only a short time. [2] Serologic evidence of immunity is the only acceptable proof of immunity for pregnant women.

5. **Notify healthcare providers of all exposed patients.**

6. **Immunize all susceptible patients and staff.** Live-virus rubella vaccine given after exposure has not been demonstrated to prevent illness, but theoretically could prevent illness if administered within 3 days of exposure. All susceptibles who are ≥12 months of age (and for whom it is not contraindicated) should receive rubella vaccine given as the combined formulation of measles, mumps, rubella (MMR) vaccine. (Please review Attachment D [at the end of this chapter] on "MMR Vaccine Concerns.")

   Previous administration of human anti-Rho(D) immune globulin (RhoGam) does not generally interfere with an immune response to rubella vaccine. However, women who have received anti-Rho immune globulin should be serologically tested 6–8 weeks after vaccination to assure that seroconversion occurred. If other antibody-containing blood products are needed for other reasons, they should be administered at least 2 weeks before and deferred for up to 11 months after administration of MMR vaccine.

7. **Exclude susceptible staff.** Unlike measles, vaccinating immediately postexposure does not prevent an individual from acquiring rubella. Therefore, all susceptible individuals without proof of immunity, including those just vaccinated, can become infectious and must be excluded on days 7 through 23 postexposure. They may return on the 24th day. If additional cases occur, the exclusion period may need to be extended.

8. **Isolate susceptible patients and suspect/confirmed cases**. Susceptible patients ≥12 months of age should be vaccinated and placed on droplet precautions for days 7–23 after exposure. They may be taken off precautions on the 24th day. All suspect and confirmed cases should be placed on droplet precautions during their infectious period. The infectious period for rubella is 7 days before until 7 days after rash onset. They may be taken off precautions on the 8th day.

9. **Collect specimens for diagnostic testing on infants with suspect CRS and their mothers, as detailed in Attachment A** (at end of this chapter)**.**

10. **Conduct surveillance** for two incubation periods (46 days) after the last exposure in the facility, and **report all suspect cases of rubella to the Massachusetts Immunization Program at (617) 983-6800.**

11. **Take the opportunity to review the facility's policy on post-partum immunization of susceptible women.** The Massachusetts Immunization Program provides MMR vaccine to all maternity hospitals for routine vaccination of post-partum susceptible patients as well as for outbreak control. Birthing facilities should be informed of this and encouraged to adopt a policy of routine post-partum vaccination.

D. Preventive Measures

Although good personal hygiene (which consists of proper handwashing, disposal of used tissues, not sharing eating utensils, etc.) is important in preventing rubella, vaccination, including routine childhood vaccination, catch-up vaccination of adolescents, and targeted vaccination of high-risk adult groups (such as international travelers and adults born outside the US), is the best preventive measure. Workers born outside the United States are a potentially susceptible population in which outbreaks may occur after importation of the virus from areas where rubella is endemic. Vaccinating against rubella in workplaces is a strategy to reach this susceptible population and can be a critical step in eliminating indigenous rubella.

The continuing occurrence of rubella among women of childbearing age indicates the need to continue vaccination of susceptible women in this age group. The absence of evidence of vaccine teratogenicity suggests that the practice is safe. Vaccination of susceptible women of childbearing age should:

- be part of routine general medical and gynecological outpatient care;
- take place in all family-planning settings; and
- be provided routinely before discharge from any hospital, birthing center, or other medical facility, unless a specific contraindication exists. (*Note:* Previous administration of human anti-Rho(D) immune globulin (RhoGam) does not generally interfere with an immune response to rubella vaccine. However, women who have received anti-Rho immune globulin should be serologically tested 6–8 weeks after vaccination to assure that seroconversion occurred.)

Reasonable practices in any immunization program include a) asking women if they are pregnant, b) not vaccinating pregnant women, c) explaining the potential risk for the fetus to women who state that they are not pregnant, and d) counseling women who are vaccinated not to become pregnant during the 3 months following MMR vaccination.

Please refer to the most current versions of the ACIP statement on measles, rubella, and mumps (listed under References, below), MDPH's *Immunization Guidelines*, and MDPH's *Massachusetts Immunization Program-Supplied Vaccines and Patient Eligibility Criteria* for details about MMR vaccine, the recommended schedule, who should and shouldn't get the vaccine, and who is eligible to receive state-supplied vaccine. These as well as other relevant resources are available through the Division of Epidemiology and Immunization at (617) 983-6800 or (888) 658-2850.

A *Rubella Public Health Fact Sheet* for the general public can be obtained from the Division of Epidemiology and Immunization or through the MDPH website at <http://www.state.ma.us/dph/>. Click on the "Publications" link and scroll down to the Fact Sheets section.

ADDITIONAL INFORMATION

The following are formal CDC surveillance case definitions for rubella and congenital rubella syndrome (CRS). They are provided for your information only, it is not necessary to use this information for reporting or investigating a case. (CDC case definitions are used by the state health department and CDC to maintain uniform standards for national reporting.) For reporting to the MDPH, always use the criteria outlined in Section 2) A of this chapter.

Case Definition for Rubella (as defined by CDC)

Clinical case definition

An illness that has all the following characteristics:

- Acute onset of generalized maculopapular rash
- Temperature >99.0°F (>37.2°C), if measured
- Arthralgia/arthritis, lymphadenopathy, or conjunctivitis

Laboratory criteria for diagnosis

- Isolation of rubella virus,
- Significant rise between acute- and convalescent-phase titers in serum rubella immunoglobulin G (IgG) antibody level by any standard serologic assay, or
- Positive serologic test for rubella immunoglobulin M (IgM) antibody

Case classification

Suspected: any generalized rash illness of acute onset
Probable: a case that meets the clinical case definition, has no or noncontributory serologic or virologic testing, and is not epidemiologically linked to a laboratory-confirmed case.
Confirmed: a case that is laboratory confirmed or that meets the clinical case definition and is epidemiologically linked to a laboratory-confirmed case.

Case Definition for Congenital Rubella Syndrome (as defined by CSTE, 1999)

Clinical case definition

An illness usually manifesting in infancy resulting from rubella infection in utero and characterized by signs or symptoms from the following categories:

- Cataracts/congenital glaucoma, congenital heart disease (most commonly patent ductus arteriosus, or peripheral pulmonary artery stenosis), loss of hearing, pigmentary retinopathy
- Purpura, hepatosplenomegaly, jaundice, microcephaly, developmental delay, meningoencephalitis, radiolucent bone disease.

Clinical description

Presence of any defect(s) or laboratory data consistent with congenital rubella infection. Infants with CRS usually present with more than one sign or symptom consistent with congenital rubella infection. However, infants may present with a single defect. Deafness is the most common single defect.

Laboratory criteria for diagnosis

- Isolation of rubella virus, or
- Demonstration of rubella-specific immunoglobulin M (IgM) antibody, or
- Infant rubella antibody level that persists at a higher level and for a longer period than expected from passive transfer of maternal antibody (*i.e.*, rubella titer that does not drop at the expected rate of a twofold dilution per month)
- Detection of rubella virus by polymerase chain reaction (PCR)

Case classification
Suspected: a case with some compatible clinical findings but not meeting the criteria for a probable case
Probable: a case that is not laboratory confirmed and that has any two complications listed in paragraph (a) of the clinical case definition or one complication from paragraph (a) and one from paragraph (b), and lacks evidence of any other etiology
Confirmed: a clinically consistent case that is laboratory confirmed
Infection only: a case that demonstrates laboratory evidence of infection, but without any clinical symptoms or signs

Comment
In probable cases, either or both of the eye-related findings (cataracts and congenital glaucoma) count as a single complication. In cases classified as infection only, if any compatible signs or symptoms (*e.g.*, hearing loss) are identified later, the case is reclassified as confirmed.

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Attachment A: Memorandum on diagnosis of rubella infection in pregnant women exposed to rubella and in their babies (5 pages)

Attachment B: Instructions for collection of serologic specimens from suspect cases (including CRS infants) and a virus serology requisition form (2 pages including requisition form)

Attachment C: Specimen Collection for Isolation of Rubella Virus from Cases of CRS or Acute Rubella (2 pages including requisition form)

Attachment D: MMR Vaccine Concerns (5 pages)

Note: These attachments are separate PDF files. To access them, go back to the *Guide to Surveillance and Reporting* main page and click on the P–R drop down menu. The attachments are listed under Rubella.